

What is claimed is:

1. A system for controlling fluid flow into an inlet of a vehicle, said system comprising:

at least one vortex generator mountable to the vehicle, said vortex generator capable of generating streamwise vortices in the fluid flow and capable of adjusting a strength of the streamwise vortices and a lateral position of the streamwise vortices relative to the inlet;

detection means mountable to the vehicle for detecting the lateral position of the streamwise vortices and for producing an output indicative thereof;

measuring means mountable to the vehicle for measuring pressure of the fluid flow that has entered the inlet and for producing an output indicative thereof; and

a controller responsive to said detection means, said measuring means and said vortex generator for controlling the operation of said vortex generator based on the outputs from said detection means and said

measuring means, wherein the strength and the lateral position of the streamwise vortices are adjusted thereby controlling the fluid flow into the inlet.

2. A system as in claim 1 wherein said vortex generator comprises means mountable to the vehicle for ejecting fluid into the fluid flow.
3. A system as in claim 2 wherein said detection means comprises sensors mountable to the vehicle proximate to the inlet of the vehicle.
4. A system as in claim 3 wherein the ejected fluid is air.
5. A system as in claim 1 wherein said vortex generator comprises:

at least one wing; and

means, mountable to the vehicle and each said wing, for positioning each said wing in the fluid flow to generate the streamwise vortices and for positioning each said wing flush with the vehicle to eliminate the streamwise vortices.

6. A system as in claim 5 wherein said detection means comprises sensors mountable to the vehicle proximate to the inlet of the vehicle.

7. A system for controlling water flow into an inlet of a vehicle wherein the inlet forms part of an underwater launch system that includes a tube coupled to the inlet for housing a payload that is to be launched therefrom using the water flow passing through the inlet, said system comprising:

at least one vortex generator mountable to the vehicle forward of the inlet with respect to forward movement of the vehicle, said vortex generator generating streamwise vortices in the water as the vehicle moves therethrough, said vortex generator being controllable to adjust strength of the streamwise vortices and a lateral position of the streamwise vortices relative to the inlet;

detection means mountable to the vehicle for detecting the lateral position of the streamwise vortices and for producing an output indicative thereof;

pressure sensors mountable to the vehicle fore and aft of the payload for measuring pressure of the water thereat

that has entered the inlet and flowed into the launch system, said pressure sensors producing outputs indicative of the pressure fore and aft of the payload; and

a controller responsive to said detection means, said pressure sensors and said vortex generator for controlling said vortex generator based on the outputs from said detection means and said pressure sensors, wherein the strength and lateral position of the streamwise vortices are controlled to balance the pressure fore and aft of the payload.

8. A system as in claim 7 wherein said vortex generator comprises means mountable to the vehicle for ejecting a flow of fluid into the water.

9. A system as in claim 8 wherein said detection means comprises sensors mountable to the vehicle proximate to the inlet of the vehicle.

10. A system as in claim 7 wherein said vortex generator comprises:

at least one wing; and

means, mountable to the vehicle and each said wing, for positioning each said wing in the water to generate the streamwise vortices and for positioning each said wing flush with the vehicle to eliminate the streamwise vortices.

11. A system as in claim 10 wherein said detection means comprises sensors mountable to the vehicle at the inlet of the vehicle.

12. A system for controlling water flow into an inlet formed in a vehicle wherein the inlet forms part of an underwater launch system that includes a tube coupled to the inlet for housing a payload that is to be launched therefrom using the water passing through the inlet as the vehicle moves through the water, said system comprising:

vortex generating means mountable to the vehicle forward of the inlet with respect to forward movement of the vehicle, said vortex generating means generating streamwise vortices in the water as the vehicle moves therethrough, said vortex generating means being controllable to adjust strength of the streamwise vortices and a lateral position of the streamwise vortices relative to the inlet;

a plurality of pressure sensors mountable to the vehicle for sensing pressure at a plurality of locations to include locations fore and aft of the payload; and

a controller responsive to said plurality of pressure sensors and said vortex generating means for controlling said vortex generating means based on the pressure so-sensed, wherein the strength and lateral position of the streamwise vortices are controlled to balance the pressure fore and aft of the payload.